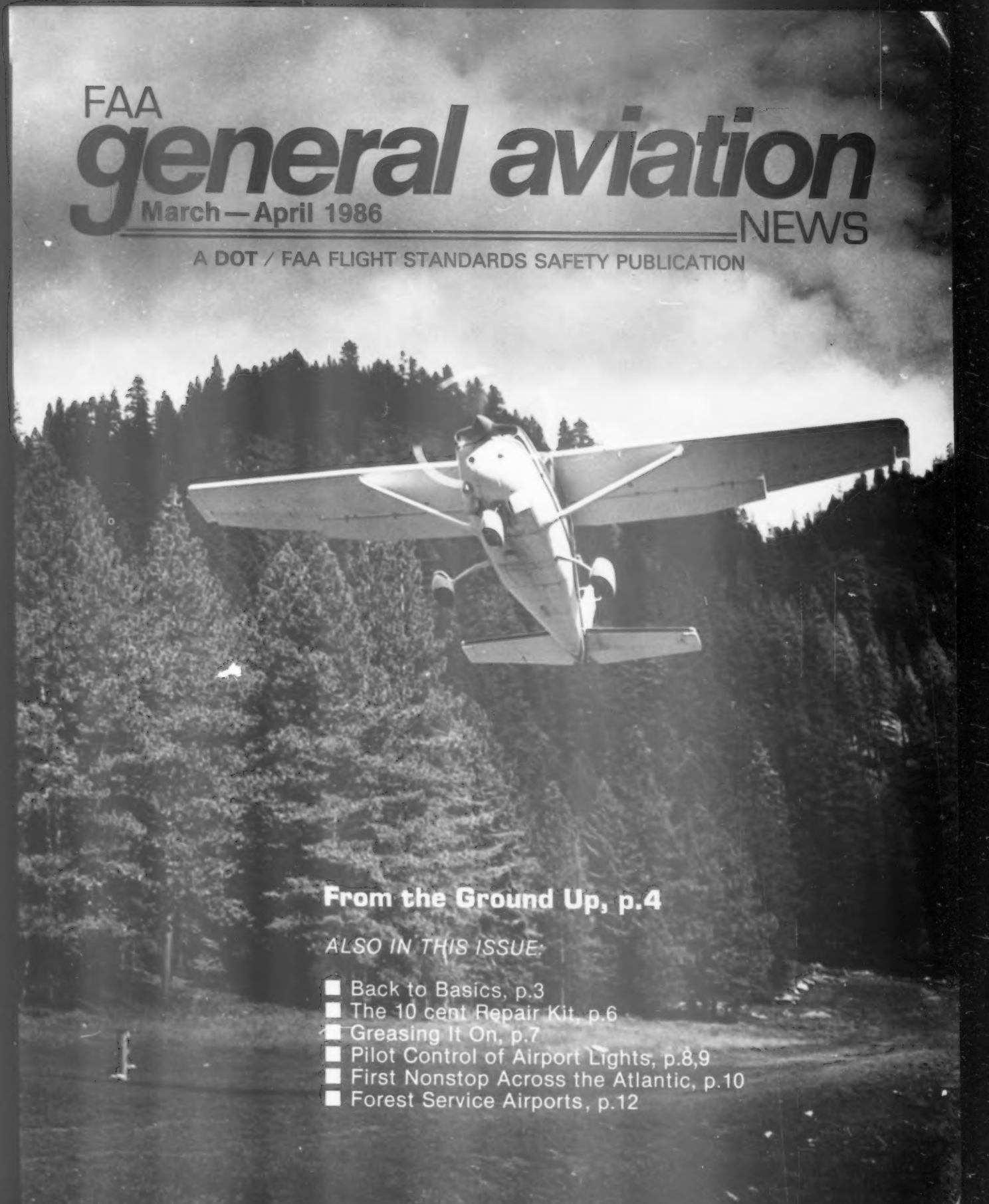
FAA
general aviation NEWS
March—April 1986
A DOT / FAA FLIGHT STANDARDS SAFETY PUBLICATION



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U.S. Department of Transportation
Federal Aviation Administration

FAA GENERAL AVIATION NEWS

MARCH/APRIL 1986
Volume 25, Number 2

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FAA GENERAL AVIATION NEWS is published by Flight Standards' Accident Prevention Program Branch, AFS-810, Federal Aviation Administration, Department of Transportation, Washington, D.C. 20591, in the interest of flight safety. The magazine is designed to promote safety in the air by calling the attention of general aviation airmen to current technical, regulatory and procedural matters affecting the safe operation of aircraft. Use of funds for printing FAA GENERAL AVIATION NEWS was approved by the Office of Management and Budget through March 31, 1986. All printed materials contained herein are advisory or informational in nature and should not be construed as having regulatory effect. The FAA does not officially endorse any goods, services, materials or products of manufacturers that may be mentioned. **Certain details of accidents described herein are altered to protect the privacy of those involved.**

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BRIEFS

SEAT PROBLEMS Several recent accidents and incidents, which may have resulted from inadvertent movement of the pilot's seat at a critical phase of flight, have been reported in Cessna aircraft. FAA is proposing to issue an Airworthiness Directive that could require maintenance and inspection in accordance with Cessna Single Engine Service Bulletin. SEB85-6 (3/22/85); also possibly repositioning of the seat stops and installation of a seat lock warning placard.

Some 170,000 Cessna aircraft could be affected, including all single engine models and a number of light twins. Concerned persons may obtain further information or may forward comments on the proposed AD by writing to the Regional Counsel, FAA Central Region, Att: Rules Docket No. 86-CE-02-AD, Room 1558, 601 E. 12th St., Kansas City, MO 64106. Send comments by 5/21/86.

STRUTS AWEIGH. The strut-to-float attachment bolts on some types of float-equipped airplanes are susceptible to corrosion, especially in a salt water environment. Examining float attachment fittings carefully before the annual Spring launch, and replacing rust-weakened parts, can prevent the loss of a float at a critical point in flight.

FLY-A-CONTROLLER. Pilots who would like to show controllers problems encountered on the airborne side of the microphone are reminded that FAA encourages non-pilot ATC personnel to accept familiarization flights from civilian pilots. What's in it for you? The Aircraft Owners and Pilots Association has a free brochure by that name for its membership and for other pilots interested in getting into the fly-a-controller program. Available free from AOPA, 421 Aviation Way, Frederick, Md. 21701. Or call 800-872-2672.

HARNESSING PASSENGERS. A shoulder harness must be installed at all seats of normal, utility and acrobatic aircraft having passenger configuration of nine seats or less (excluding pilot seats) and manufactured after December 12, 1985. During takeoff and landing the harness, when available, must be fastened, in accordance with instructions provided by crewmembers. FAR Parts 23 and 91 have been appropriately amended.

BACK TO BASICS

Are you a safe pilot? From the time we start learning the basic fundamentals of flight we are educated, persuaded, and motivated to be a *safe pilot*. Yet, accidents occur and the pilot is usually the focal point of interest during the post-accident investigation conducted by the FAA and the Safety Board.

Even when not responsible for the primary cause of the accident, all too often the pilot is the source of "contributing factors" mentioned by investigators. These factors involve errors in basic operational procedures like running out of gas and forgetting to put the wheels down prior to landing. *Most aviation incidents and accidents are the result of regulatory noncompliance and/or ignoring simple, basic operational procedures which are taught, in the initial stages of pilot training.*

The continued practice of these basic fundamental procedures is necessary to assure aviation safety. Their execution becomes ragged if they are not reviewed periodically.

In January of this year, FAA, in cooperation with the aviation industry, launched a national "Back to Basics" program, refocusing attention on these fundamentals. The agency is urging all pilots, mechanics, air traffic controllers and other individuals who are actively involved in aviation activities, to turn their attention back to the fundamental building blocks of being a good pilot.

"Back to Basics" is a comprehensive three year effort to identify these fundamentals and keep them in the forefront of pilot consciousness.

Readers are invited to make free use of the artwork and articles in this magazine to promote interest in the Back To Basics campaign in their community. Additional copies of this issue are available for meetings.

The FAA Accident Prevention Program is actively promoting Back to Basics throughout the country with outstanding pilot seminars featuring new audio-visual presentations, new films, and new speakers, including a number of celebrity pilots. "On Landings" is one of these presentations which is exciting overflow audiences. Produced by the General Aviation Manufacturers Association (GAMA) it is being utilized by the agency's Accident Prevention Specialists nationwide, by Accident Prevention Counselors, and by others in the aviation industry.

Landing and takeoff procedures are being emphasized by the Accident Prevention Program during the first quarter of 1986. The Back to Basics campaign will address a new topic every three months through 1988. It will seek to increase the pilots' knowledge of basic techniques and to improve attitudes through educational techniques.

Collision Avoidance Awareness will be highlighted in the second quarter of this year. Topics addressing weather-related accidents and fueling accidents will complete the 1986 programs. Future Back to Basics topics will include: Decision Making, Medical Factors, Emergency Procedures, Weather Briefings, Preflight, Maintenance, Stall/Spins, and Communications.

FAA's Accident Prevention Program is *your* program—it is not just for the inexperienced by any means. This program allows us all to communicate the "cause factors," "contributing factors," and just plain "goofs" that can turn a perfectly safe pilot into an unsafe pilot and possibly an unhappy statistic! ■

From the Ground up

Problems that will lead to takeoff accidents are usually present before the aircraft starts to move

In the course of a year about 500 general aviation pilots lose control of their aircraft after lifting off, and return to earth in an unplanned landing, with more or less serious consequences. Recent issues of the National Transportation Safety Board's "Annual Review of Aircraft Accident Data" disclose that about 20 percent of all accidents happen on takeoff, with the majority of these occurring during *initial climb*. Over the past five years initial climb accidents annually resulted in about 150 fatal or serious injuries to pilots or passengers, about 175 aircrafts destroyed and nearly 300 substantially damaged.

Is there anything we as pilots can do to protect ourselves from this kind of bodily harm? Obviously takeoff and initial climb cannot be avoided in flying. The procedure itself is not inherently difficult or dangerous, but the tolerance for error is at a minimal point: the engine is already at or near full power, airspeed is initially not far above stalling speed. Precise control and sound judgement are called for, as well as quick decisions in the event of a mechanical failure or traffic problem.

A quick glance over the 454 takeoff accidents reported for 1983 by the Safety Board (latest year for which completed data is available) suggests that the probable cause of most of these accidents is derived from circumstances beyond the pilot's control—i.e., "mechanical failure," "power loss," "contaminated fuel," "terrain conditions," "obstacles to flight," etc. However, a more careful scrutiny shows that the *great majority of these accidents could have been prevented if the pilot had been fully attentive during the preflight preparation and/or during the takeoff roll.*

Most of the mechanical failure or power loss accidents, for example, turn out to have been a consequence of a deficiency which was—or should have been—known to the pilot before lift off. A typical instance would be the case of a Piper (single engine) *Comanche*, who reported engine failure at an altitude of approximately 75 feet, after taking off from Cincinnati, OH. He made a gear-up landing and slid off the end of the runway, damaged the aircraft considerably and was fortunate to escape with minor injuries.

During the postcrash investigation, the engine was bench-tested and found to operate normally. The right tank was half full of fuel; the left tank had little, if any, usable fuel. The pilot had a habit—as many pilots do—of initially burning fuel out of his left wing tank when flying alone in the airplane, in order to reduce the effects of weight imbalance. He was certain that he had six to eight gallons left in the tank before taking off, but he had not actually looked—it was a cold November day, and he was not warmly dressed. He acknowledged the possibility of fuel starvation as a possible cause of the accident.

Most engine failure problems that surface during initial climb originate on the ground, as a result of inadequate preflight inspection. Contaminated fuel, for example, if not spotted as a result of thorough straining of all tank sumps, may not become evident during engine start-up, magneto check, or taxiing. Water, being heavier than fuel, tends to collect at the bottom of the sump; and in some airplanes—notably those with pronounced wing dihedral—water accumulation tends to collect at the inboard side of the wing fuel tanks as long as the airplane is on level ground. However, during the takeoff run and the initial climb, when there may be some rocking of the wings, unsuspected water may be drawn into the engine and cause it to misfire or quit. Proper and thorough draining procedures can prevent such failures.

Collision with ground objects during initial climb, (commonly a line of trees or wires beyond the runway) is often ascribed by the pilot to be poor engine performance and/or maintenance. Sometimes the pilot is correct as far as he goes in his analysis of the accident. Occasionally—not very often but *occasionally*, because maintenance people are also human and subject to error—an aircraft comes out of an annual inspection, overhaul or other type of maintenance in something less than an airworthy condition. The wrong type of sparkplugs or igniters may have been installed; intake and exhaust valves may have been improperly seated; carburetor linkage may have been left disconnected, etc. Even so gross an error as failing to replace drained engine oil happens once in a while.

This is certainly inadequate maintenance, but it need not necessarily lead to an accident *if the pilot accepts his responsibilities for making certain the aircraft, as it comes out of a shop, has not only been signed off as airworthy but is in fact airworthy.* He or she can read the maintenance log, note what was done, and observe while still on the ground whether the instrument readings correspond to normal expectations. It is possible, if you hurry, to take off in an airplane with no oil in the engine sump and the oil temperature needle not yet in the red, but not if you run the engine up properly first.

Similarly, it is possible to start up the engine, perform a thorough mag drop check, and still take off with an engine that is not achieving full power and may fail during initial climb to take you over ground obstacles that you normally clear with ease. A mag drop check, which is certainly important, gives you a comparative reading of magneto performance. In addition, the carburetor heat check will indicate whether the heating system is functioning; but since these checks are not made routinely at full power they do not tell you whether the engine is giving you 100 percent of rated power, or 90 percent, or 80 percent, etc. When it comes to clearing obstacles at the runway end, a very small power degradation can make all the difference between a safe climbout and a collision with trees or wires.

"CLIMB TO CRUISE" ACCIDENTS—1983

This is a statistical analysis of all the "climb to cruise" accident contained in the National Transportation Safety Board's files for the calendar year 1983. It was derived from a computerized print-out of the accident briefs of 454 accidents provided to us by NTSB.

Mechanical failure, resulting from neglected maintenance: 79
Stall: 32
Fuel contamination: 50
Overload: 11
Wind conditions: 31
Impact with object (trees, buildings, wires, terrain, etc.): 58
Lack of familiarity with aircraft: 24
Ice on the aircraft: 5
Complete loss of power: 9
Unsuitable terrain: 35
Weather—fog, clouds: 11
Inadequate preflight: 25
Weight and balance: 3
High density altitude: 15
Carburetor ice: 3
Miscellaneous: 17
Undetermined: 46

Planning the takeoff—first step to a good departure.

Careful pilots take a quick look at the rpm indicator at the beginning of their takeoff run, when the throttle is wide open and rpm are at maximum indication. Some pilots take a quick second glance before lifting off. Consequently they are not likely to discover, during initial climb, that the tree line is approaching faster than the minimum clearance altitude. Getting an airplane off the ground with a sub-par engine can be much easier than getting it down safely in the remaining runway, once you discover you have difficulty after leaving ground effect.

Professional pilots use indicators other than the panel instruments to check on the flying capability of their aircraft before they leave the ground. Distance remaining to the end of the runway is always an important factor. The engine may be performing perfectly, but if the aircraft does not want to fly after the normal takeoff roll at maximum rpm, something is wrong and probably needs looking into.

There are many conditions which could downgrade aircraft performance on takeoff, which are not directly related to the engine. The wind may have shifted very abruptly and without warning. The tires may be soft. The runway may be soggy or slippery. Gust locks may not have been removed. A door or baggage hatch may have opened. You may have failed to read or respond to an item on the checklist. Unless you have established a go/no-go landmark that can be seen easily from the cockpit while taking off, you can easily leave yourself with too little runway to cope with, in the event that a safe takeoff and climbout cannot be accomplished.

Some pilots, unfortunately, succumb to the notion that if you can just get airborne, get the weight off the wheels, everything will be all right—airspeed will pick up, obstacles will diminish, and you will soar like a bird. It seldom works that way. If you pull the aircraft off the runway at less than recommended speed you are apt to stall as soon as you reach the boundary of ground effect. At that point you will decelerate unless you drop the nose, and if the aircraft porpoises around before achieving enough airspeed to accomplish the maximum climb angle, you may not be able to clear a five foot airport fence, let alone a tree line.

What it all comes down to is that the kind of problems that lead to takeoff accidents usually are not beyond the capability of the pilot involved. It is not skill, experience, or intelligence that is generally lacking, but *maximum attentiveness to everything that is going on prior to and during the procedure.*

Eternal vigilance—not just dollars and sense—is the price of an accident-free flying record. ■

Expect the UNEXPECTED

"Expect the unexpected!" is the motto of John H. Doster, Manager of the Allentown (PA) District Office who has over 40 years of experience as an inspector. This is the first article of a series of his flying reminiscences.

The 10 Cent Repair Kit

When I was just a little kid I had the pleasure of seeing Col. Charles A. Lindbergh in action. In 1928 he made a goodwill tour of the country and stopped in our town. They brought a gasoline truck out on the airport to refuel the *Spirit of St. Louis*, but he didn't let them run any hose into his airplane. The fuel was poured into five gallon cans, the gas was lifted up on top of the wing and poured into the tank through a funnel lined with a chamois filter. It was a slow process, but that's how he got all the way across the Atlantic in a single engine airplane—getting up in the dark that historic morning in 1927 and straining all those 450 gallons of gas by hand. I heard some pilots say the colonel was a nut about straining fuel, but he was no nut.

He knew that foreign matter can dissolve in fuel so you can't see it, until it settles out on vital parts, like plugs, or filters. He knew there's some fuel that has a little contamination and some that has a lot—but there's no such thing as uncontaminated fuel. Count on it!

That little lesson stayed with me when I took up flying later and I never got stuck way out in the boondocks with a fuel-starved engine—except for that one time in Montana. Maybe I was a little cocky. I'd started flying in my teens and the ink was hardly dry on my pilot certificate before I was carrying passengers, hauling freight—you name it and I'd fly it anywhere, anytime. I hadn't met an airplane I couldn't fly or fix, and by the time I'd piled up about 10,000 hours I'd begun to believe there wasn't much left for me to learn about flying. Wrong! The big lesson still in front of me was that when you stop learning its time to stop flying.

That nugget of truth came to me just after World War II, after I'd been sitting out on the prairie east of Billings for about 12 hours with a dead engine, the sun getting ready to set and the chill in the air starting to bite. I'd taken off from Billings early that morning headed for Wolf Point, which is located on the headwaters of the Missouri River in the northeast corner of the state—mostly open cattle range, hardly changed since the Lewis and Clark Expedition passed through it a century or so earlier.

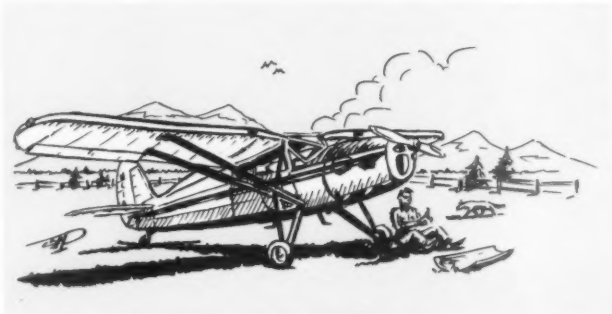
I was flying a rented Piper *Pacer*—the taildragger antecedent of the *Tripacer*—and I had checked it out thoroughly before starting out on the flight, accompanied only by my flight kit, a lunchbox and a coffee Thermos. I was churning happily along at 3,500 feet under blue skies when suddenly the engine ran rough and quit. As we were going down I put in a quick radio call to the fixed base operation at Billings, telling where I was and to send a mechanic. I was sure the problem was just fuel blockage of some kind. Hard to believe, after the sample I'd drained, but the fact was I got the plane wet and I hadn't any idea where or how it had been fueled.

I landed on the prairie without any problem. I selected an open area where I could be seen easily from any direction. Complimenting myself for handling the situation so cooly I sat down on a stump and relaxed. It was late winter or early spring—hard to tell one from another in Montana—and there was still some snow patches on the ground, but the sun was warm. I waited . . . and waited . . . In between waits I sent in one radio call after another, but no one answered. The old 3105 kc set had its limitations and the big tubes ate up the battery in a hurry.

I passed the time kicking the dirt and throwing snowballs at the prairie dogs, and before I knew it the sun was pretty low and the air was getting cold. I could hear the coyotes starting up a chorus on the butte. It was evident that help was not on the way and I was in for a long night in a short cockpit if I didn't do something quick about the airplane.

The problem was, embarrassingly enough, I had no tools. Not even a jackknife—nothing. At one time or another I must have had half a dozen wrenches and pliers and what have you stashed behind the seat, but somehow they had all wandered off somewhere. I couldn't even find a can-opener, let alone a screwdriver. The only hardware in my pockets was one thin dime.

Not much of a repair kit, but it worked to loosen the Zuss fastener, so I could open the cowl. The fuel filter was secured with safety wire and it's sharp ends cut my fingers when I tried to loosen them. With some careful rock pounding I got the fuel line loose, and sure enough there was no flow, with the tanks half full. So back to the filter bowl, which was made of metal, not glass. I held the safety wire between some flat rocks and bent it back and forth until it finally broke apart. Real high tech, cave men style.



The fine brass screen inside the sediment bowl was totally covered with a clear elastic film, which held back the fuel. After the screen and bowl were cleaned out I drained about two gallons of fuel, and buttoned her up.

By this time the battery was dead, so I chocked the wheels with rocks and swung the prop to get the engine started. I knew there was probably still contamination in the fuel, but I had to decide between spending the night with the coyotes and taking my chances upstairs. The coyotes lost.

After a quick look, in the fading light, along my landing path for obstacles I held my breath and took off. Once airborne I got to thinking so hard about giving someone a piece of my mind for not sending help that I forgot to listen for engine roughness, which fortunately didn't happen. By the time I got back everyone had left the airport and there was no one to listen to me rant and rave. The next day I was told my message had been misunderstood—and who would expect the Great Fixer to need help?

Before my next flight I made up a small tool bag from an old pair of denim pants. It contained a 6-inch crescent wrench, a pair of pliers with wire cutters, two screwdrivers and about 24 inches of brass safety wire. The kit is still in my travelling bag today, though the only use it has ever had was to fix clogged shower heads in motel rooms. It has been my security blanket; if I ever leave home without it, I know I will have another forced landing. Those gremlins know when you're carrying iron! ■

Greasing It On Versus Dropping Hard

The landing phase of flight historically is where pilots are involved in the majority of accidents. Over the years, the National Transportation Safety Board (NTSB) accident statistics have placed this figure at approximately 40 percent of all accidents. The majority of the landing accidents occur during the *flare/touchdown* or *landing roll* portion of the landing maneuver. A look at landing accidents from NTSB files over a three months period, January, February and March 1983, discloses that 351 accidents occurred during the landing maneuver, with 278 of the total occurring during either the *flare/touchdown* or *landing roll*. Of these 351 accidents, 28 were fatal, resulting in a total of 62 fatalities.

After studying this accident data one might conclude that a problem exists with our initial training in landing techniques, or that pilots suffer a deterioration of skills and proficiency as time goes by.

Although accidents usually have multiple cause factors, in most cases one factor is deemed more significant than the others. Over the three month period mentioned earlier, three primary cause factors stood out. These were:

- Terrain conditions 46
- Collision with terrain or objects during a forced landing 39
- Pilot in command failed to maintain directional control 35

When we look at the 131 accidents (see table) which occurred during the flare/touchdown phase, we see that 21 of these accidents were the result of *hard landings*. Typically the aircraft flares and stalls out 10-15 feet above the runway as opposed to 1-3 feet above during the landing maneuver. Another example is when a projected flight path results in no flare or a late flare, causing the aircraft to make contact prematurely with the runway at a high sink rate. Rivaling hard landings in number are the 20 nose down or nosed over accidents, which no doubt stemmed from the initial hard landing.

In looking at the other primary causes, we find 46 inflight collisions with terrain and other objects, and 26 accidents which resulted from landing gear collapse. (A common cause of gear collapse is prior damage caused by a previous hard landing) as usual there was the one poor soul who simply forgot to put the landing gear down altogether.

Landing Accidents
January-March 1983
Flare/Touchdown Phase

Hard Landings	21
Loss of Control	
Inflight	2
On ground	2
Inflight Collision	
with terrain	33
with objects	13
Gear Collapse	26
Nose Down/Over	20
Wheels Up	1
On Ground Collision	3
Undetermined	10
Total Accidents	131

Statistics show very few accidents which were caused primarily by mechanical, electrical, or structural failures. However, 61% of the total 131 flare/touchdown phase accidents that occurred were the end result of a precautionary or forced landing. Something that cannot be learned from the statistics is the chain of events that occurred 10 to 30 minutes before the accident. The sharpness of skills and judgment that a pilot normally possesses may abandon him or her under times of stress—i.e. during an emergency situation.

A pilot who recognizes the potential for a forced or precautionary landing to occur, who prepares for such emergencies through recurrent training, and who becomes completely knowledgeable and familiar with aircraft emergency procedures, will not lose the sharpness of skills and judgment during the period of high stress. There is an old saying around aviation that "planning your flight should take *twice* as long as flying your plan." Another is that "the success of a landing depends largely on what is accomplished on downwind, base and final." In other words a good landing *demands* a good approach. We all recognize that in instrument conditions, *planning* your approach is a must, but the fact is that *all* landings should be planned, not taken for granted.

Interviews with pilots involved in landing accidents reveal that often the pilot felt during the approach that "things were not right," but continued anyway to touchdown. Many pilots have learned an expensive lesson from attempting the landing maneuver when a simple go-around procedure could have saved the day.

All pilots can learn from others' mistakes and by reviewing accident reports that contain the all too often heard phrases, "pilot lost directional control," "aircraft landed short," "aircraft landed long," "aircraft landed gear-up." Hopefully we can avoid finding ourselves in the same situation.

There seems to be a certain consistency in the pattern of landing accidents and cause factors. To break out of this mold we need to develop consistency in our recurrent training, plus a commitment to becoming totally familiar with our aircraft and a dedication to maintaining a high level of personal well being and awareness. We need to break down the landing maneuver into a series of fundamental flight sequences that dovetail into one another. Bad landings appear to happen at the last moment, but if you look back honestly and carefully you can see the problem began minutes or miles before the threshold. A hard landing tells you to take a hard look at what you were doing back there. ■

PILOT CONTROL OF AIRPORT LIGHTS

The key to lighting up many dark skies is on your microphone

If you have ever been obliged to land at an unlighted airport that was obscured by darkness or clouds and possibly surrounded by obstacles to navigation in the form of unyielding rock, you might have been willing to give up your dearest possession for some kind of magic wand that would enable you to illuminate a few light bulbs in the vicinity of a runway—right? And with good reason.

Accidents associated with insufficient (or non-existent) lighting at the airport seem to proliferate in the late winter or early spring, perhaps due to the eagerness of winter-inactive pilots to be on the wing again. Unplanned night landings may be brought on by fuel or engine problems, or by an abrupt change in the weather; but the failure to land safely may be due to *unfamiliarity with the options available to the airborne pilot for turning on airport lighting.*

In many of these accidents the pilot actually does have a kind of magic wand at hand, in the form of a radio microphone. Simply tuning in the "CTAF" or UNICOM frequency and clicking the microphone a few times will turn on runway and approach lights at hundreds of unattended airports.

Earlier this winter the pilot of an *Aero Commander* attempted a landing at an uncontrolled airport in northern Wisconsin in instrument weather shortly after dark. Observations for the area included a 600 foot overcast and visibility one mile in rain. The pilot attempted an NDB approach but flew over the airport instead of landing and failed to execute the missed approach procedure. The flight ended in a fatal crash about a mile south of the field. The airport was unattended at the time, but a pilot-activated system of runway lights for the hard surface runway, had been recently commissioned and NOTAMed. Witnesses informed investigators that the runway lights did not come on.

Pilot-activated lighting systems have become popular because of their advantages in terms of economy and utility. Constantly burning airport lights can consume a tremendous amount of electricity in the course of a day's use, particularly if they are set at medium or high intensity. The savings in electrical power when the lights are used only when needed are significant. Also, the lights last longer, and need less service when used on demand only. Furthermore, "air-to-ground radio control" allows the pilot to adjust the intensity of the lights to suit the conditions of use (some pilots may lose night adaptation of the eye from the glare of unnecessarily bright approach lights, which make it hard to see the runway after passing the threshold.

Activating approach lights gives the pilot a better opportunity to judge distance, altitude above ground, drift, etc. than runway lights alone.

Although air-to-ground lighting control was initiated at small, uncontrolled airports the practice spread to larger airports with part-time control towers or flight service stations. The procedure for controlling the lights has been standardized.

ABBREVIATIONS

VASI—Visual Approach Slope Indicator
REIL—Runway End Identifier Lights
MIRL—Medium Intensity Runway Lights
HIRL—High Intensity Runway Lights
LIRL—Low Intensity Runway Lights

Restrictions on Radio Control. The pilot may not activate airport lights during any period when this responsibility is in the hands of appropriate persons on the ground. During periods of airport attendance, the lights may be controlled by an air traffic control tower, a flight service station, or the airport management. Obstruction lights and airport beacons may not be radio controlled.

Control Procedures. The pilot tunes his communications radio transmitter to a given frequency and clicks the microphone three, five or seven times within a time span of about five seconds. This turns the standard radio-controlled lighting systems on (or up) to a selected intensity, in accordance with the options given in Table I.

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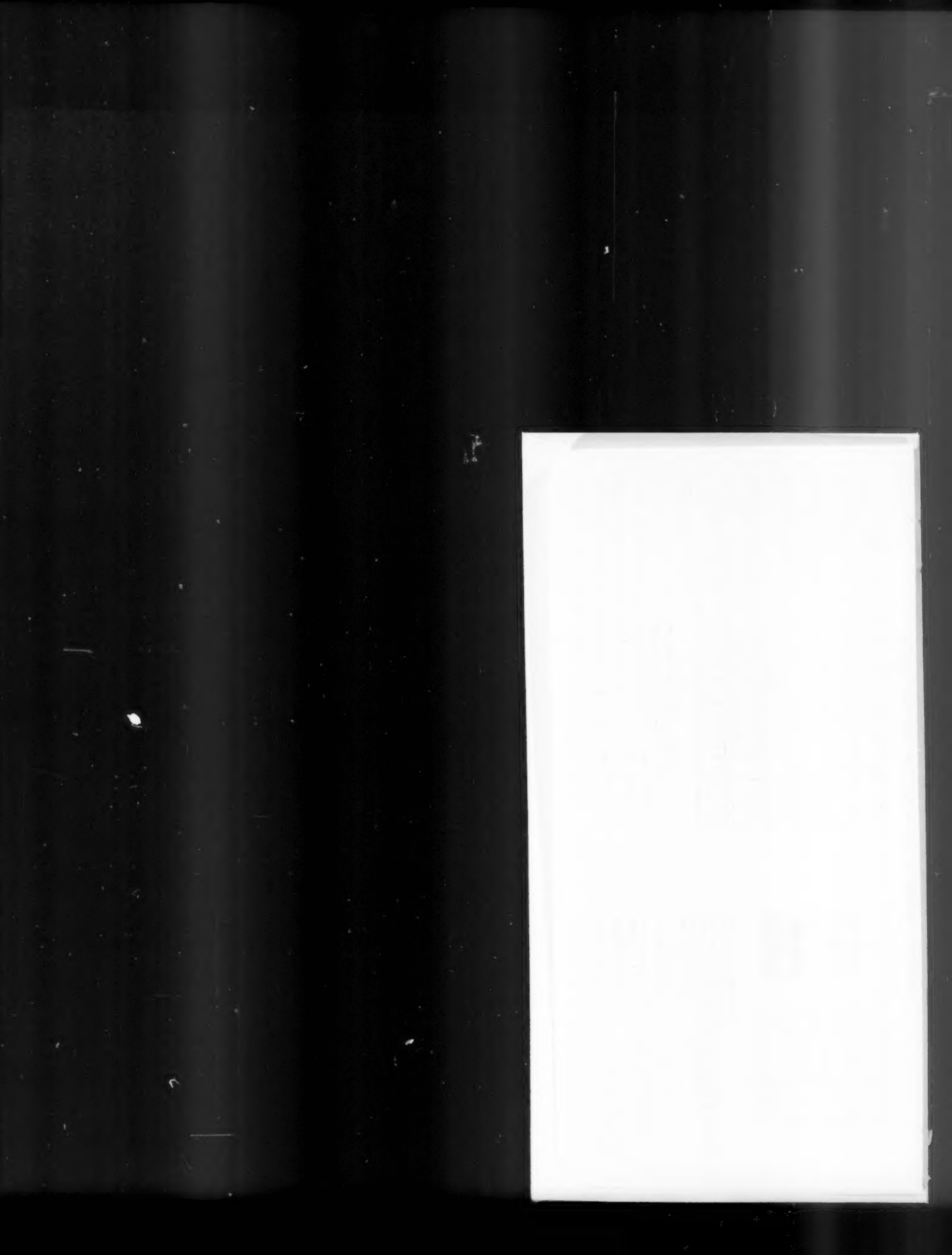


Once activated, the radio-controlled lights will stay on at the keyed intensity for 15 minutes. At the end of this 15 minute period the lights will automatically turn off or return to a preset brightness. The system may be recycled at any time for another 15 minute period at any available intensity. However, the lighting system may not be turned off by radio control before the end of the 15 minute cycle, except that some runway end identifier lights (REILs) may be changed to OFF or to a lower intensity by a reduced number of clicks (see table).

Frequency Selection. The air-to-ground radio equipment is in the frequency range of 118–136 MHz. Whenever possible the Common Traffic Advisory Frequency (CTAF) will control the lights. At unattended airports the UNICOM frequency will normally be used; at other airports it may be the tower local control frequency or the flight service station frequency.

Current frequency information is published in the FAA Airport/Facility Directory, which contains a glossary of abbreviations for the various lighting systems. Availability of radio-controlled lighting systems will also be depicted on sectional aeronautical charts by the encircled letter (L). Instrument approach procedure charts also indicate the presence of radio controllable lights, if the system is operated in accordance with FAA standards. A diagram of common approach lighting systems is shown inside the back cover of the approach charts and in the Airman's Information Manual.

At airports where approach lights and runway lights are both radio controlled, the intensity of both systems are increased and decreased simultaneously by radio signal. This is a change from previous standards which called for radio control lighting intensity only for the approach lights. On systems where the intensity of lights is automatically controlled by a photocell or other means, radio control will simply energize the system and allow the intensity to be selected automatically.

Crosswind Runways. At some airports with radio-controlled lights, a crosswind runway may have continuous low or medium intensity runway lighting at night, while the principal runway(s) are left dark, except when radio activated.

Day Mode. An energy-saving procedure, known as "day mode," is configured with radio-controlled lights at some airports, in a manner which does not allow runway lights (other than VASIs and REILs) to be turned on during daylight hours. This mode may be activated by a photocell or manually.

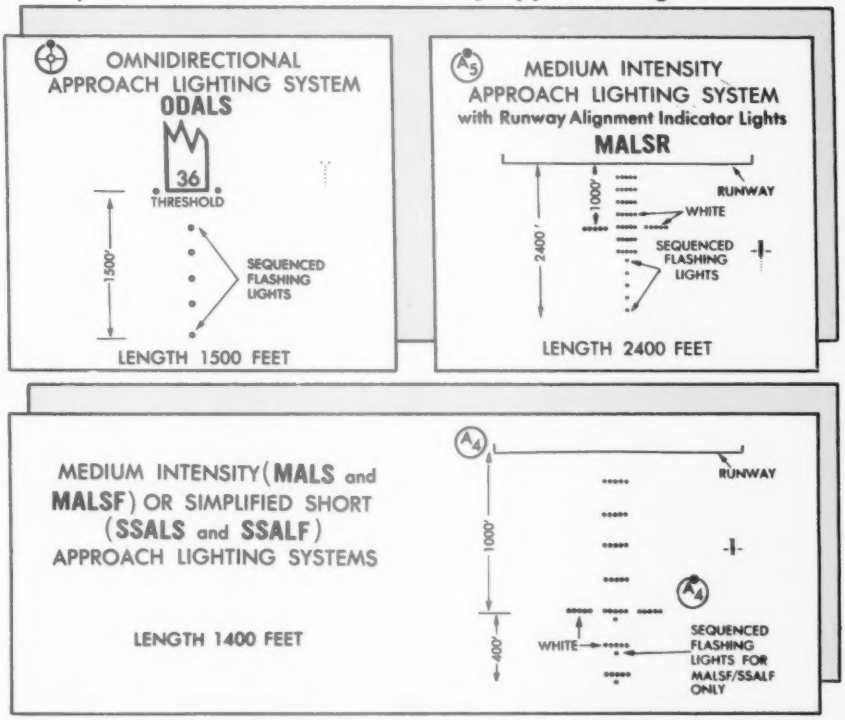
In areas where in the daytime there may be considerable voiced use of the frequency which activates airport lights, these lights may be inadvertently turned on or down as a result of three random microphone clicks in a five second period. If this becomes a problem, the three-click setting for radio control can be de-activated during the day and restored at night.

(continued on back cover)

Table I. Standard Lighting Control Options.

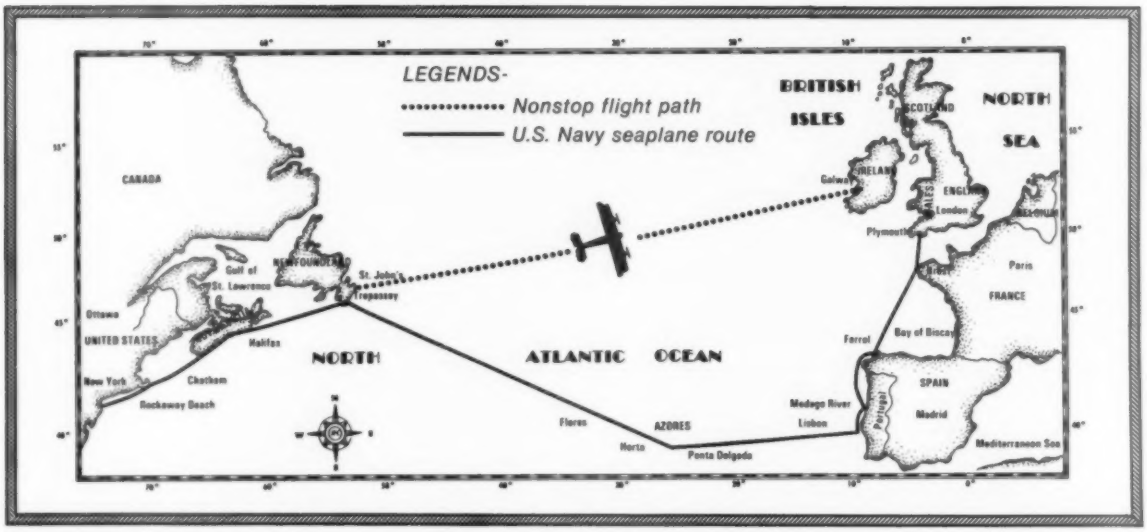
Lighting System	Number of intensity steps	Status during idle periods	Intensity step selected per no. of microphone clicks		
			3 Clicks	5 Clicks	7 Clicks
MALS	2	Off	Low	Low	High
	3	Off	Low	Medium	High
High Intensity Approach Lights	5	Off	1 or 2	3	4 or 5
Edge Lights					
Low Intensity	1	Off	On	On	On
Medium Intensity	3	Off or Low	Low	Medium	High
High Intensity	5	Off or Low	1 or 2	3	5
Taxiway Edge Lights	1	Off	On	On	On
	2	Off	Low	Low	High
	3	Off	Low	Medium	High
Runway Centerline, Touchdown Zone Lights	5	Off	1 or 2	3	5
Taxiway Centerline Lights	3	Off	Low	Medium	High
	5	Off	1 or 2	3	5
REILS	1	Off	Off	Off	On
	2	Off	Off	Low	High
	3	Off	Low	Medium	High
Visual Glideslope Indicators	Photocell Controlled	Off	On	On	On
	3	Off	Low	Medium	High
	5	Off	1 or 2	3	5

ODALs and Medium Intensity Approach Lights.



FAMOUS FLIGHTS

First Nonstop Flight Across the Atlantic



"the audacity, the courage, the physical qualities of the old heroic bygone times"

His British compatriots thought his whole idea was crazy. Since March of 1919 two competitors had had crews and airplanes in Newfoundland poised for takeoff. The chances of a latecomer winning the "Great Trans-Atlantic Race" prize appeared non-existent.

This latecomer to the competition was 27-year-old Captain John Alcock, formerly of the Royal Naval Air Service and a veteran combat pilot. He had received his pilot's license while still in his teens and had logged more than 1,000 hours before he joined the World War I effort. He soon became bored with his flight instructor duties and was reassigned to combat.

Soon after the war Alcock went to work for Vickers as chief test pilot. He became intrigued with the *Vimy*, a bomber which had come into production just before the war ended. This sturdy biplane with its 67' wing span and two 350 hp Rolls Royce engines would be perfect for the trans-Atlantic attempt. Alcock decided that if the plane were stripped of its gun mounts and bomb racks, and additional gas tanks were incorporated in the bomb bays, it would increase the fuel range to 2,400 miles—enough to cross the North Atlantic between Newfoundland and the British Isles, if the navigation was true.

Other modifications included eliminating the tandem cockpits by sealing one over and enlarging the other to hold both crewmembers. The best thing about these changes was that they could be accomplished in two weeks.

Capt. John Alcock, Lt. Arthur W. Brown.

Realizing the publicity value of the venture, the directors of Vickers agreed to finance the flight. All Alcock needed now was a navigator.

It was strictly by accident that Alcock was introduced to Lieutenant Arthur (Ted) Brown. He had gone to see the plant manager about installing the extra fuel tanks at the same time Brown was being interviewed for employment. When Brown found out about the proposed trip, he offered his services as navigator. He had been a gunner in the RAF, and his plane had been shot down by German-fighters. Brown was shot in the foot while attempting to evade capture by the Germans, and the wound resulted in a permanent lameness.

To relieve boredom while he was incarcerated, he studied navigation, charting a mythical trans-Atlantic trip that he one day hoped to make. At the war's end, when the London *Daily Mail* renewed its offer of a £10,000 ($50,000) prize for the first nonstop aerial crossing of the Atlantic, Brown offered his services as a self-taught navigator to the major British aircraft manufacturers. However, they thought his lame foot would be a hindrance in the cockpit and did not consider him. Alcock, however, considered Brown the answer to his prayers—a trained available navigator with all the charting and planning for the route already in his mind. Brown got a job with Vickers, but not as an engineer as originally planned.

By early May Alcock and Brown followed the other competitors' path to Newfoundland,

where bad terrain and poor weather had grounded the impatient crews of the earlier arrivees. They too found the weather uncooperative and locating a suitable runway in the hilly, boggy, craggy island seemed an impossibility.

On May 18, the ill-fated Sopwith and Martinsyde attempts were made. The Martinsyde biplane was demolished on takeoff; the Sopwith went down two thirds of the way across the ocean but the crew was rescued by ship.

Alcock and Brown waited until June 14 before weather forecasters predicted clear skies and westerly winds extending all the way to Ireland.

On the day of the 14th, the winds delayed shifting west until noon, when Alcock finally gave the word to pull the chocks. The engines started on the first attempt and they were off down the runway. The airplane sluggishly picked up speed and for a moment looked like it would be a repeat of the Martinsyde takeoff failure. However, at the last moment the *Vimy* lifted into the air, narrowly missing a hedge at the end of the runway.

Increasing their ground speed by 30 mph, the westerly wind would be one of the few weather advantages they would have during the trip. Fog was encountered shortly after clearing land and the cloud layer soon was higher than they could fly. They would have to rely on dead reckoning for most of the trip.

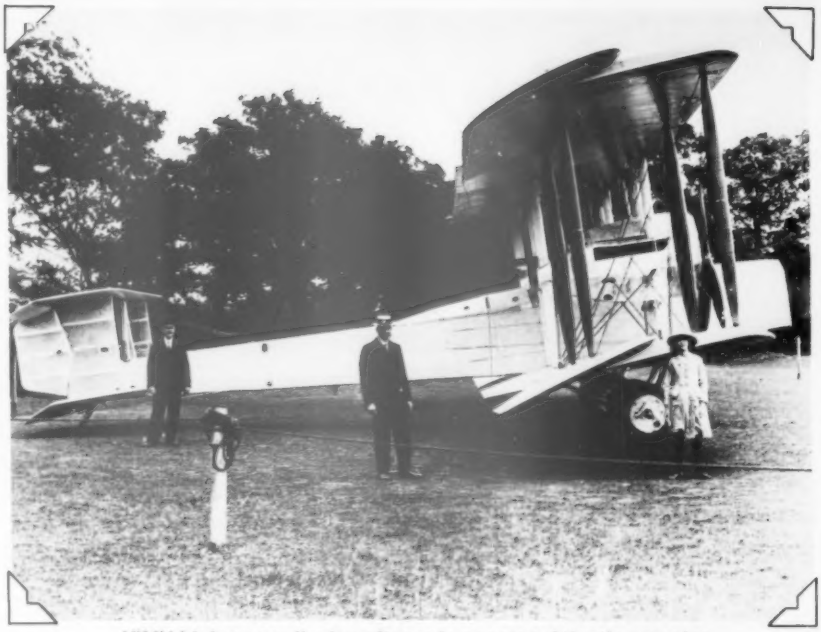
When they tried to tap out a message of their progress and check their location, there was no response. Plenty of chatter, but no acknowledgement of their message. They soon discovered that the small propeller that powered the wireless' wind-driven generator was missing. It was located on a wingtip, so that there was no way they could have fixed it even if they had a spare part.

The next calamity occurred when their exhaust pipe broke loose and eventually fell off, letting the exhaust flame stretch out toward the wing. Both men watched helplessly, expecting the plane to go up in flames at any moment—but nothing happened.

Shortly before dusk the *Vimy* popped into the sunlight. Quickly taking navigational readings with Brown's sextant, they found they were only slightly off course and made the appropriate corrections. During the night the stars would play hide-and-seek with them but appear long enough to get occasional bearings. By midnight they had flown over 1,000 miles—nearly two-thirds the way across.

By dawn the two men were exhausted and chilled to the bone. During the night the batteries for their electrically heated flight suits had failed. If they were hoping for the sunlight to thaw them out, nature had other ideas. With dawn came a fierce thunderstorm, releasing rain, wind, and hail on their open cockpit.

The storm had turned to sleet, obscuring any attitude reference, when a new nightmare struck. Suddenly the plane started to plummet towards the ocean, apparently because of ice buildup. At 500 feet they broke through the clouds. Alcock pulled back on the control column finally leveling the plane off. Opening both throttles wide, he ascended to 9,000 feet but the controls were still sluggish and the engine labored. Using a flashlight to inspect the airframe, a quick look told them that ice was starting to block the engine air intake duct.



VIMY biplane on display after epic nonstop Atlantic crossing

Ted Brown climbed out of the cockpit onto the wing, despite Alcock's efforts to keep him in. Inching along with his crippled leg and hanging on to the struts, he finally reached the engine and hacked the ice away from the right air inlet with his jackknife while the propeller whirled only inches away. Inching back the way he came and crawling forward the same distance again to the left inlet, he managed to free the ice and return safely to the cockpit.

At 11,000 feet the sun shone long enough to allow another navigational fix. They were slightly north of their intended course but close to Ireland. Heading in a southernly direction toward Galway, they sighted the Irish island of Eshal in the distance. Brown grabbed his charts and found they were only 25 miles off course.

They chose a field near the Clifden wireless radio station in Galway and shot two flares from a Very pistol to let someone know they had arrived. The green field had no obstructions on it and they came down for a straight-in approach. Cutting the engines, easing back on the control column, and breathing a sigh of relief, Alcock felt the wheels touch down. They jerked to a sudden halt, tipped over and came to rest with the plane's nose buried in the ground.

The beautiful green field turned out to be an Irish peat bog. Fortunately, neither man was hurt. They had been flying for 16 hours and 12 minutes, covering over 1,900 miles.

To Brown the greatest disappointment was that no one in Ireland seemed to be aware they were making the flight. But eventually the local farmers accepted their story and spread the word; a cheering London crowd welcomed them home. Besides getting their £10,000 prize, they were also knighted by King George V. The *Vimy* received a place of honor in the Science Museum in South Kensington. Winston Churchill, then the Secretary of War, declared that Alcock and Brown's feat ". . .shows that while we have become more powerfully equipped with engineering and scientific apparatus, we have also preserved as a race the audacity, the courage, the physical qualities of the old heroic bygone times."

The flight of the *Vimy* proved that nonstop trans-Atlantic flight was possible, but it would be 20 years before the state of the art caught up with human courage—and commercial flight across the ocean became a reality. ■

FOREST SERVICE LANDING STRIPS

The ultimate in no-frills runways

Birds are not the only flyers who migrate once Spring's warmer weather arrives. Aircraft are now coming out of winter storage and pilots are heading towards all points of the compass in search of a change of scenery. In the quest to get away from it all, some of the more popular destinations are the National Parks, Forests, and Wilderness Areas dotting the U.S. landscape. Most pilots know that off airport landings are prohibited on Federal land, but many pilots are unaware of the numerous forest management airstrips which can be legally and safely used by visiting civilians, provided that you know *where* these strips are, *what* they are, and *how* to use them.

Back country airfields are usually unimproved landing strips with perhaps the bare essentials of runway markers and the remnant of a wind sock—by no means readily distinguishable from the air. These strips are often inaccessible by surface transportation other than horse or mule back. Usage is largely determined by weather conditions prevailing at the time. The U.S. Forest Service controls about 100 of such strips on National Forest Land and in Wilderness Areas. (Forest management airfields in the National Parks are not open to the public.)

The airstrips on National Forest Lands are available for public use, unless otherwise marked on the sectional charts. They are mainly firefighting bases, but are also used by local FBO's who fly in anything from rafting to hunting parties, using small, single engine aircraft with STOL characteristics. Runway lengths range from roughly 1,000′ to 2,500′, and the approach and departure routes are often over rugged and unforgiving terrain, demanding skill, currency, and experience.

In the warmer summer months some strips can only be used during early morning or late evening, as high field elevation, coupled with high temperatures adversely affect aircraft performance and may make landing and takeoff unsafe. *Use is always at the pilot's own risk.* During the winter months the fields are closed and must be approved for reopening each spring by Forest Service personnel. This means that each field must be surveyed on foot or horseback to check for firmness and maintenance needs. Dropping in smokejumpers sometimes is the only practical way of doing a field check.

It is important to remember when flying over these National Forest, Parks, and Wilderness Areas that aircraft in transit are requested not to fly below 2,000′ AGL, and that landings are permitted only on non-restricted airports shown on sectional charts. Wilderness or Primitive Areas are protected by a Congressional mandate which strictly forbids all electrical, motorized, or vehicular equipment from these lands. (For more information, see "Wilderness Flying," Sept./Oct. 1983, and "Aerial Tours Over Protected Land," July/August 1985).

The Forest Service strongly recommends contacting their appropriate regional office to obtain flight information if planning to fly in unfamiliar territory. The Forest Service has an Aviation Officer assigned to each of its nine regions. Under his supervision are the safety officers for each forest, which is further divided into districts, with a Forest Aviation Officer assigned to each of these.

The Regional Aviation Officers will be able to answer questions directly, or refer the pilot to the best information source. A phone call or a letter inquiring about terrain and conditions before setting out on a trip could save the pilot hours of delay, and help avoid possibly serious flight hazards. In some states (Idaho for example) charts and airport directories are available for the asking.

Flying the back country airstrips can be an exciting adventure and devoid of mishaps—if you really know what to expect. ■

LIST OF U.S. FOREST SERVICE REGIONAL AVIATION OFFICERS

Northern Region
(States: MT, ID, ND)
5665 Highway 10W
Missoula, MT 59802
406-329-4903

Rocky Mountain Region
(States: CO, NE, SD, WY)
11177 W. 8th Avenue
Box 25127
Lakewood, CO 80225
303-236-9566

Southwest Region
(States: AZ, NM)
517 Gold Avenue, SW
Albuquerque, NM 87102
505-842-3354

Intermountain Region
(States: ID, NV, UT, WY-Teton)
324 25th Street
Ogden, UT 84401
801-625-5511

California Region
(State: CA)
2020 Hurley Way
Suite 130
Sacramento, CA 95825
916-921-5543

Pacific Northwest Region
(States: OR, WA)
319 SW Pine Street
P.O. Box 3623
Portland, OR 97208
503-221-2931

Eastern Region
(States: CT, DE, IA, IL, IN, KS, MA, ME, MD, MI, MN, MO, NH, NJ, NY, OH, PA, RI, VT, WV, WI)
310 West Wisconsin Avenue
Room 600
Milwaukee, WI 53203
414-291-3632

Southern Region
(States: AL, AR, FL, GA, KY, LA, MS, NC, OK, PR, SC, TN, TX, VA)
1720 Peachtree Road, NW
Suite 750
Atlanta, GA 30361-9102
404-347-4243

Alaska Region
(State: AK)
Federal Office Building
P.O. Box 1628
Juneau, AK 99802
907-586-8866 ■

Wyoming's Bridger National Forest south of Yellowstone Park.

Riverside meadows "airport" in southern Montana.

Allison Ranch strip, Idaho's Salmon River National Forest.

DONALD's DUCK. On December 17, 1936, manufacturer Donald Douglas introduced a new kind of airplane that would make air transportation profitable and practical. Fifty years and 10,654 airplanes later, a few thousand of the venerable DC-3's are still flying. The *Gooney Bird* has done everything from dropping paratroopers and towing gliders during World War II to hauling passengers, troops, and executives—as well as every type of freight imaginable.

ALCOHOL TEST FOR CREWMEMBERS MAY BE MANDATORY

FAA has completed action on several rule changes to FAR Parts 61, 63 and 91 which will make possible chemical testing of crewmembers suspected of flying while under the influence of alcohol.

These regulations already prohibit any crewmember (pilot, flight engineer, navigator or flight attendant) from entering upon duty status while under the influence of alcohol or within eight hours of consuming any alcoholic beverage, or while having 0.4 percent or more of alcohol in the bloodstream. However, enforcement has been difficult, as FAA inspectors lack the training or authority to test anyone for alcohol.

The current rule changes, which become effective April 9, 1986, will require crewmembers to submit to a blood level alcohol test when so requested by an authorized law enforcement officer (many civil jurisdictions have laws against flying after drinking which parallel the FARs.) Any crewmembers who refuse to be tested, or to make the results available to FAA, face a possible suspension or revocation of certificate or other enforcement action by FAA.

The agency is pursuing a vigorous educational program on the effects of alcohol abuse in aviation. Nearly 8% of all accidents since 1968 involve alcohol.

MINIMUM EQUIPMENT LISTS FOR MULTI-ENGINE AIRCRAFT

On March 13, 1986, FAA reinstated Section 91.30 of the Federal Aviation Regulations. This rule permits the operation of multi-engine aircraft with certain instruments and equipment inoperable, in accordance with an FAA-approved minimum equipment list (MEL).

Applications for an MEL should be made with the nearest Flight Standards District Office. Information on this subject is also available from Tom Stuckey or John Lynch of the Project Development Branch (AFS-850), at FAA Headquarters, 800 Independence Ave., SW, Washington, DC 20591. Telephone number 202-426-8150.

FAA is currently working on a related rulemaking project to provide relief for other categories and classes of aircraft, such as single-engine airplanes and rotorcraft. This project should be completed by the fall of 1986.

LATEST AIRMAN PUBLICATIONS

Control Locks

Guidance on means of warning pilots about control lock engagement can be found in Advisory Circular 23.679-1, "Control System Locks." Free from DOT Subsequent Distribution Unit, M-494.3, Washington, D.C. 20590.

Obstructions

Advisory Circular 70/7450-1G provides updated information on the standards for marking and lighting of obstructions. Free from the DOT.

Aircraft ID

Information and guidance for the "Installation, Removal, or Change of Identification Data and Identification Plates on Aircraft Engines" is provided in Advisory Circular 45-3. These two circulars are free from the above DOT address.

Technical Reports

Sixty aviation-related technical reports are available to the public from the national Technical Information Service. For a free list of the publications, their prices, and how to order contact FAA's Office of Public Affairs, APA-300, 800 Independence Ave., S.W., Washington, D.C. 20591; (202) 426-8521. Ask for News Release FAA 35-85.

Cabin Safety

A final report on the Flight Safety Foundation's cabin safety conference and workshop held last year is available through the National Technical Information Service. The 200-page report contains transcripts of presentations from the conference by technical experts in cabin safety and passenger protection. Contact NTIS at (703) 487-4650 for price information and to order report number DOT/FAA/ASF100-85/01, "Proceedings of Cabin Safety Conference and Workshop."

NEW POLICY STATEMENT ON AIRPORT OPERATIONS

FAA has published a policy statement which proposes to clearly define its area of responsibility in airport matters, and the principles which should govern the agency in exercising its authority. Public meetings to discuss this proposed policy have been held in Washington, D.C. and Denver, and a third meeting is scheduled for Los Angeles on April 23, 1986, at the Hacienda Hotel in El Segundo.

Historically local authorities have developed and operated airports, while FAA exercised responsibility for air traffic control, navigation and communication systems. However, in view of its Congressional authorization to determine efficient and safe use of the airspace, the agency reserves the right of final decision in such matters as runway and taxiway capacity levels, environmental impact and traffic compatibility.

Anyone wishing to make a statement in person at the Los Angeles hearing should advise Carol Strong, FAA Office of Policy and Plans, APA-400, 800 Independence Ave., S.W., Washington, D.C. 20591 (202-426-3331) as soon as possible. Copies of the policy proposal, as published in the Federal Register for January 22, 1986 may be requested from Colleen Cleary, APA-430, at the same FAA street address. Telephone: 202-426-1960.

• Joint Effort

It should be noted that the Navy NC-4, which won the Trans-Atlantic Air Race in 1919 (Jan/Feb 86 issue), was flown by a Coast Guard pilot—a feat that is recognized by a plaque on the NC-4 display at the Naval Aviation Museum in Pensacola. Coast Guard LT Elmer F. Stone earned his naval aviator wings in April 1917 at Pensacola and was designated CG Aviator No. 1. Unfortunately, Elmer was designated before the Coast Guard acquired any aircraft, so he was assigned to temporary duty with the Navy.

Stone was at the flight controls for the historic crossing. USN LCDR Albert C. Read was the "Aircraft Commander" under Navy rules, but preoccupied himself with navigating as was then the custom. LT Stone was the designated pilot, and LT Walter Hinton, USN, was Stone's co-pilot.

Another valuable crewmember was radio officer Ensign Herbert C. Rodd, USN Reserve Forces, whose resourceful use of the limited radio equipment helped NC-4 on course.

CDR Terry W. Sinclair, USCG
McKinleyville, CA

Thank you for the additional information. Part II of the Trans-Atlantic Air Race is on page 11 of this issue.

Elmer F. Stone, USCG

• Address Change

In your May/June 1985 issue you printed the address of the commercially published General Aviation News. *However, that address has changed to: GAN, P.O. Box 110918, 1712 Belt Line Rd., Carrollton, TX, 75011-0918. I thought you might be interested.*

Don Jewel
Harrisburg, PA

• CZ's Revisited

In your reply to William Cowan, Jan./Feb. "Forum," you probably didn't write all that you were thinking. This resulted in a slightly misleading answer. A person doesn't have to "stay out" of a control zone "if the ceiling is less than 1,000', he simply may not fly beneath a ceiling of less than 1,000', nor may he enter the airport traffic area, as you explained, but he can fly in the control zone above the airport traffic area if he maintains a cloud separation per FAR 91.105 and has 3 miles, or 5 miles, as appropriate, visibility. Even in visual meteorological conditions ATC can refuse entry into a lot of airspace, but the control zone isn't one of them.

Byran W. Carpenter
San Antonio, TX

You are correct. A VFR pilot may transit a control zone above a cloud layer, if he has appropriate cloud clearance and flight visibility, regardless of the ceiling height over the airport.

Thank you for your observations.

FAA GENERAL AVIATION NEWS welcomes comments from our readers. No anonymous letters will be used, but names will be withheld on request. Address: FAA GENERAL AVIATION NEWS, AFS-810, Washington, D.C. 20591.

• LORAN-C Approaches

In reading the article on LORAN-C (Jan/Feb 86), I noticed the statement that the FAA does not provide a graphic presentation or chart of the LORAN approach and that it must be ". . . obtained by the operator from an independent source, such as Jeppesen."

I can draw several conclusions from this statement. National Ocean Service does not publish, and will not publish, LORAN approach chart? Can you clear up the confusion by explaining the current, and expected future, status of LORAN charts?

Thanks for the quality magazine. I do appreciate it.

Gerard Stockhouse
Watertown, MA

National Ocean Service produces instrument approach charts for public use. Special use approach charts are made by commercial charting companies. Both types are based on FAA approved procedures and data.

Loran-C approaches are at present limited to special use approval. When Loran-C approaches are approved for public use you may expect to see Loran-C approach charts in your NOS approach plate booklets.

Thank you for your interest, and for your appreciative remarks.

• Special VFR in Transit?

If I am transitting a control zone while operating under VFR, as in Situation II of your article on CZ's in the Jan/Feb issue, and I determine that the flight visibility in the area where I intend on operating is less than that required for VFR operations, can I obtain a Special VFR clearance even if the primary airport is reporting VFR conditions?

Corey J. Ferguson
Mission Viejo, CA

If you determine that the flight visibility in the control zone ahead will be marginal or less than required for VFR operations, you may request a Special VFR clearance, even when the primary airport is reporting VMC. However, if this would interfere with the existing flow of IFR traffic in the zone, you can expect a delay, or possibly a denial. Maintain VFR conditions until a clearance is received. If a clearance is denied, select another route of flight.

• Moving Cities

Reference the November/December 1985 issue, article "Unmanned Aerospace Vehicles," Where's Monroeville, LA?

Francis Drake
Montgomery, AL

Monroeville, AL, where the East Coast military training route for unmanned aerospace vehicles terminates, was accidentally transposed to the abbreviation for Louisiana. Thank you for calling it to our attention.

• LOCID Error?

In your November/December issue on page 4 at the bottom lefthand corner, you give an example for translating the LOCID 4LJ in the new IVRS as 045654. I think this is an error. Shouldn't the translation be 045556?

Walter B. Nelson
Greenwich, CT

The example in the magazine is correct. The second keystroke for each letter indicates the letter's position on the key not in the LOCID.

• Mode C Is Not On With "ON"

I wish to direct your attention to a somewhat misleading statement about a rule change to FAR 91.24, in the January-February 1986 issue of FAA GENERAL AVIATION NEWS. The news article entitled, "Transponders Must Be 'On' in Controlled Airspace," implies that transponders must be turned to the "on" position while in controlled airspace. Most general aviation transponders that I have used display "off", "standby", "on" and "alt" (altitude) positions. The "on" position does not provide Mode C altitude information. The "alt" position transmits that information to air traffic control.

The rule change to FAR 91.24 specifies that "each person operating an aircraft equipped with an operable ATC transponder shall operate the transponder, including Mode C equipment if installed." Turning a transponder to "on" is sufficient for non-Mode C equipped aircraft; however, I submit that most transponders in use today have Mode C capability.

I enjoy reading your most informative magazine and appreciate the opportunity to comment on this point.

Charles A. Winkenwerder
Des Moines, IA

Your point is very well taken. A Mode C equipped transponder should be on "alt" in controlled airspace, and wherever else you need to transmit your altitude.

INSTRUMENT CORNER

• Below Minimums Approach

Is it legal for Part 91 aircraft to commence an instrument approach even if the report ceiling is below DH or MDA and the visibility is below published minimums? If the approach can be commenced, is it legal to land if the flight visibility, as determined by the pilot, allows identification of visual references as per §91.116? Also, when "flight visibility" is mentioned in §91.116, does it refer to visibility from the cockpit?

John Manera
Rockport, MA

A pilot operating under FAR Part 91 may commence an instrument approach regardless of the reported ceiling and visibility. Descent below the MDA/DH and landing can be completed as long as the following three conditions prevail:

(1) "The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent, using normal maneuvers. . ."

(2) "The flight visibility is not less than the visibility described in the standard instrument procedure being used."

(3) Except for a Cat II or III approach . . . at least one of the following visible references for the intended runway is distinctly visible and identifiable to the pilot: threshold, threshold markings, threshold lights, runway end identifier lights, visual approach slope indicator, touchdown zone or touchdown zone markings or lights, runway or runway markings, or the runway lights.

Flight visibility, as used in FAR §91.116 and defined in FAR Part 1, ". . .means the average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night."

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(continued from page 9)

Coordination with FAA. At least 90 days before a new airport lighting system is commissioned, or changes are made in its operation, the pertinent data should be sent to the nearest FSS or directly to the FAA National Flight Data Center, ATO-250, Washington, DC 20591. The information will be made available to pilots as NOTAMs and published in Airport/Facility Directories and charts.

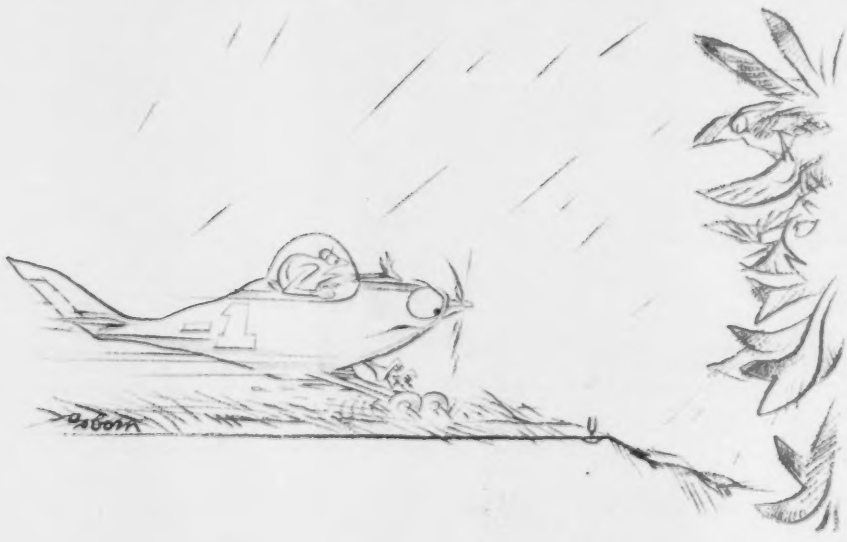
Approach Lighting. Approach lights are a series of lights, or banks of lights, extending outward from the runway threshold along the extended runway centerline. Their purpose is to assist pilots in making instrument approaches at night, and to permit somewhat lower weather minimums for instrument approaches. For the non-precision approaches used at unattended airports, the approach lights will be some array of medium intensity lights.

The more extensive of these systems has about 50 lights displayed along the approach course. These will usually consist of up to seven rows, or bars, of steady burning lights, with a triple bank of lights indicating 1,000 feet to the threshold. Sequenced flashing lights may extend to a point as far as 2,400 feet from the threshold.

In most of these systems the lights are visible from the air only within a limited azimuth range—essentially useful to aircraft that are already aligned with the runway. One exception is the system known as ODALS (omni directional approach lighting system). ODALS consist of only seven strobe lights, one at either side of the threshold and five others extending outward 1,500 feet and flashing in sequence toward the runway. The amount of illumination is not great, but these lights are visible from all directions to aircraft flying at from 2° to 10° above the horizon. They can be very helpful in some circumstances. ODALS is favored by some airport managers because of the relatively low cost of installation, operation, and maintenance.

Approach lights, as well as runway lights, may be radio activated and used by pilots landing under VFR conditions. It pays to become familiar with them. If you have had any experience with maintenance charges resulting from hard landings in the dark or semi-dark, you will appreciate the value of using current charts and other publications to ascertain what kind of airport lighting is available in the area of your destination airport—and checking NOTAMs for outages or changes in lighting operations.

In an emergency, just keying the microphone rapidly seven times on the UNICOM or tower frequency might light up the darkness. But why leave it to chance?

For further details consult the recently updated (1986) FAA Advisory Circular 150/5340-27A available from the DOT Distribution Section, M 494.3, Washington, DC 20590. ■

Long wet grass...
slippery as glass